Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of claims:

1. (Previously presented) A method of monitoring cross-talk, at a point in an optical system, arising at least in part from a non-linear process in a transmission medium utilized in the optical system" in a multiplexed optical signal having a plurality of channels upon one or more of which has been impressed, at another point in the optical system, a unique dither, the method comprising:

determining channel power of at least one channel of the plurality of channels;

determining a fractional power of any dither present upon the at least one channel resulting at least in part from the non-linear process in the transmission medium; and

determining a power transfer coefficient from the fractional power and the channel power of the at least one channel, the power transfer coefficient indicative of cross-talk occurring on the at least one channel from any of the plurality of channels upon which the unique dither has been impressed, the cross-talk due at least in part to the non-linear process in the transmission medium.

2. (Original) A method according to claim 1 wherein the power transfer coefficient is determined from an equation $\beta_{ij} = (\beta_{ij} P_j)/P_j$ wherein β_{ij} is the power transfer coefficient, P_j is the power of a channel, j, corresponding to the at least one channel and $\beta_{ij} P_j$ is the fractional power of a dither, I, corresponding to the dither present upon the at least one channel.

3. (Original) A method of controlling output characteristics of the multiplexed optical signal comprising the method of claim 1 and further comprising providing instructions for controlling the power transfer coefficient.

4. - 14. (Cancelled)

15. (Previously presented) An optical apparatus adapted to monitor cross-talk, at a point in an optical system, arising at least in part from a non-linear process in a transmission medium utilized in the optical system, in a multiplexed optical signal having a plurality of channels upon one or more of which has been impressed, at another point in the optical system, a unique dither, the apparatus comprising:

an OSA (Optical Spectrum Analyzer) adapted to measure an indicator of channel power of at least one channel of the plurality of channels and to measure an indicator of a fractional power of any dither present upon the at least one channel resulting at least in part from the nonlinear process in the transmission medium; and

a control circuit adapted to determine a power transfer coefficient from the fractional power and the channel power of the at least one channel, the power transfer coefficient indicative of cross-talk occurring on the at least one channel from any of the plurality of channels upon which the unique dither has been impressed, the cross-talk due at least in part to the non-linear process in the transmission medium.

16. - 38. (Cancelled)

39. (previously presented) A method according to claim 1 wherein a non-linear process in a transmission medium comprises stimulated Raman scattering.

40. (previously presented) An apparatus according to claim 15 wherein a non-linear process in a transmission medium comprises stimulated Raman scattering.

41. (Previously presented) A method according to claim 1 wherein at least one of the plurality of channels of the multiplexed optical signal is impressed with a plurality of dithers to provide wave identification (WID) information.

42. (Previously presented) An apparatus according to claim 15 wherein the indicator of the fractional power, $\beta_{ij}P_j$, and the indicator of the channel power, P_j, are voltages and one of the OSA and the control circuit is adapted convert the voltages into powers.

43. (Previously presented) An apparatus according claim 15 applied to a multiplexed optical signal wherein at least one channel of the plurality of channels having impressed a unique dither comprises at least one additional unique dither to provide WID.

44. (Currently amended) An apparatus according to claim 15 comprising a plurality of basic functional components which are optical devices, wherein the plurality of basic functional components include one or more of a group consisting of at least one optical tap, at least one PIN detector, at least one erbium-doped fiber amplifier (EDFA), at least one dynamic gain flattened filter (DGFF), and at least one dispersion compensation module (DCM).